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The nomenclature of crabs collected during the cruises of HMS Porcupine in 1869 and 1870, with notes on the Norman collection of invertebrata and its acquisition by the British Museum (Natural History)

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INTRODUCTION

In preparation for a report on the decapod crustaceans collected during recent I.O.S. investigations in the Porcupine Seabight to the southwest of Ireland, previous collections from the same region have been reviewed. The earliest of these was obtained during a series of oceanographic cruises to the west of the British Isles made in the paddle gun vessel H.M.S. *Porcupine* (Fig. 1) in the summer of 1869. These cruises were very significant in the development of deep sea biology since they included the collection of the deepest dredge samples obtained prior to the *Challenger* Expedition of 1872–76.

The 1869 cruises, along with the short cruise of H.M.S. *Lightning* the previous year and that of the *Porcupine* to the Mediterranean in 1870, were the subject of Charles Wyville Thomson's classic volume, *The Depths of the Sea*, published in 1873 shortly after the *Challenger* began her epic voyage. Thomson's book summarised the state of oceanographic knowledge at the time and reviewed the main results of the *Lightning* and *Porcupine* cruises. However, despite the uniqueness of the deep biological samples, large parts of the collections were never worked up adequately. In particular, with the

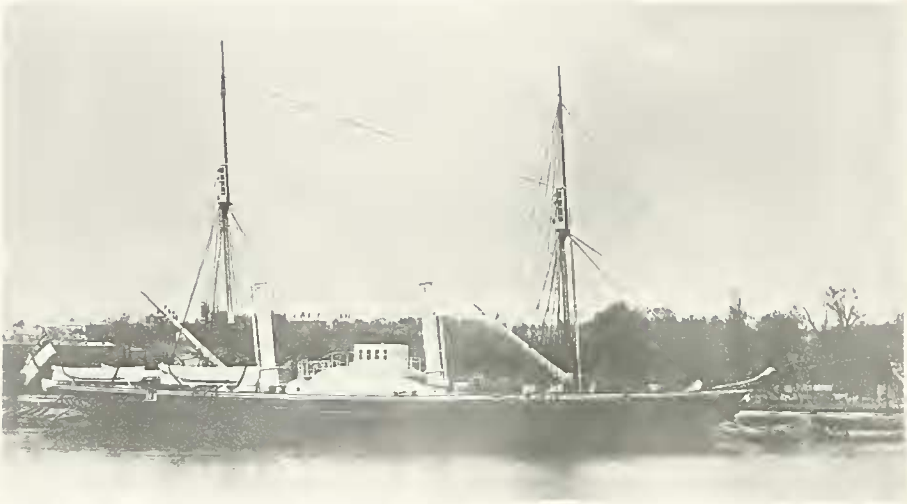

Fig. 1 HMS *Porcupine*. A wooden, two-masted paddle gun-vessel, built at Deptford Dockyard in 1844, the *Porcupine* was 141 feet long and had a displacement of 490 tons. This rather poor photograph, apparently the only one of the ship in existence, is reproduced by kind permission of the Hydrographer to the Navy.

parts of the collections were never worked up adequately. In particular, with the exception of the isopods, very few of the crustaceans were reported upon at all except in *The Depths of the Sea*. In the case of the decapods, Thomson mentioned three previously undescribed crab species, *Dorhynchus thomsoni* (as *Dorynchus*, see Holthuis, 1962), *Rochinia carpenteri* (as *Amathia*) and *Cymonomus granulatus* (as *Ethusa*). Thomson made it clear that he had been furnished with these names by A. M. Norman to whom the study of the crustaceans had been entrusted. Norman had recognised these species as new, but neither before the appearance of Thomson's book, nor subsequently, did he publish descriptions of them. The *Porcupine* collections also included a fourth undescribed crab species, *Ebalia nux*, which was not mentioned by Thomson and first appeared in print as a *nomen nudum* in a preliminary account of the voyage of the *Travailleur* (Norman, 1880) and was subsequently figured in Milne-Edwards (1883) and described in Pocock (1889). In the ensuing confusion the names have been variously attributed to Norman, Thomson, Norman in Thomson, Milne-Edwards, and Norman in Milne-Edwards (see Appendix 1). This paper attempts to explain how this confusion arose and to establish the correct authorship of the species concerned.

In dealing with these questions I have inevitably become embroiled with the 'Norman Collection', a large collection of crustaceans and many other invertebrate groups, which came to the British Museum (Natural History) around the turn of the century. The origins and history of this important collection do not seem to have been properly documented in the past; brief details, particularly of the chronology of its acquisition by the Museum, are therefore provided.

THE PORCUPINE CRUISES

Following the success of the short cruise of the *Lightning* in 1868, the larger and more suitable *Porcupine* made three separate cruises during the summer of 1869, the first under the scientific direction of J. G. Jeffreys, the second under C. W. Thomson and the third apparently under the joint leadership of Thomson and W. B. Carpenter (see Thomson, 1873; Deacon, 1971; Rice, 1986).

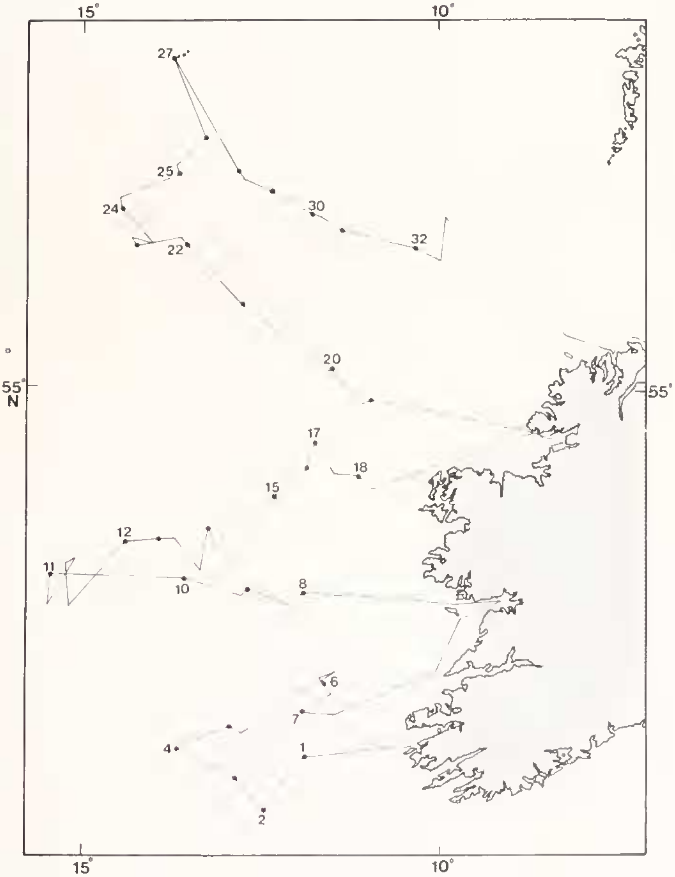

Fig. 2 Track of the first cruise of HMS *Porcupine* in 1869, with the station positions marked. Redrawn from Thomson, 1873, plate 11.

The first cruise (Fig. 2) lasted from 18 May to 13 July during which the *Porcupine* worked along three loops to the west and north of Ireland; one across the northern part of the Porcupine Seabight and back to Galway, a second running west from Galway across the Porcupine Bank into the Rockall Trough and back to Killibegs, and a third across the northern part of the Rockall Trough to the Rockall Bank and back to Lough Swilly, after which the ship docked in Belfast. A total of 32 official dredging stations were worked, down to 808 fathoms (1480m) on the first 'loop', to 1230 fathoms (2250m) on the second, and to 1476 fathoms (2700m) on the third. An additional even deeper dredge haul (station 11, 1630 fathoms) was apparently not successful since although Thomson (1873, p. 142) included it in a table of dredging stations, neither he nor Jeffreys (1869) mention it in their respective narratives. A number of dredge hauls, mostly in rather shallow water but including the first haul of the cruise at a depth of 110 fathoms (200m) some 40 miles off Valentia, were not given station numbers.

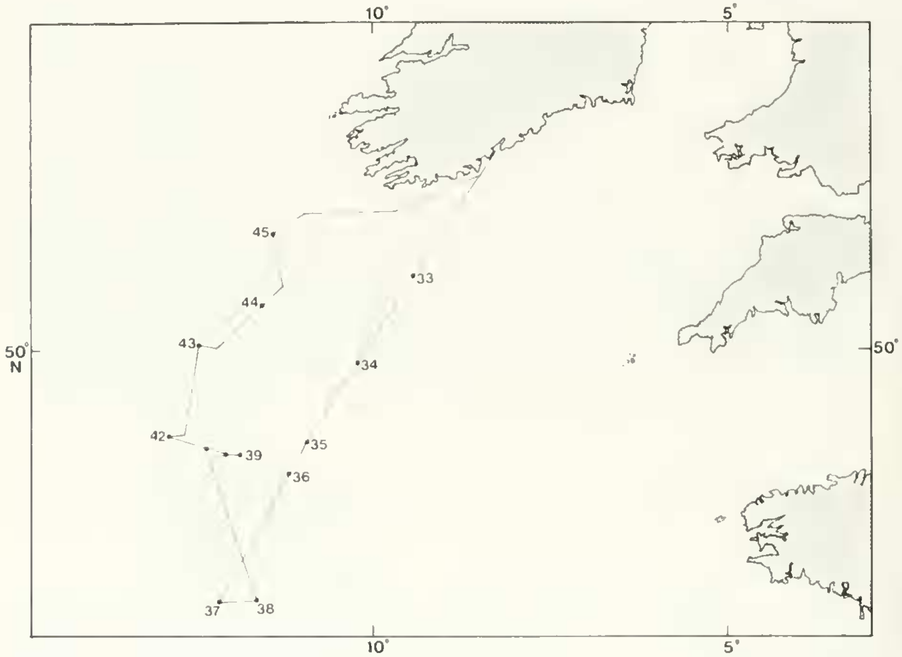

Fig. 3 Track of the second cruise of HMS *Porcupine* in 1869. Redrawn from Thomson, 1873, plate III.

Following the arrival of the *Porcupine* in Belfast, Thomson took over the scientific direction from Jeffreys and the ship sailed once more on 17 July for the second cruise (Fig. 3). The original intention had been to continue the work of the first cruise to the east and north of Rockall to join up with the work in the Faeroe–Shetland Channel accomplished from the *Lightning* the previous year. However, since dredging had already been accomplished successfully down to almost 1500 fathoms, with abundant animal life having been found at this depth, a new plan was adopted. Instead of proceeding to the northern area where only relatively modest soundings were known to occur, Thomson successfully applied to the Hydrographer, G. H. Richards, for permission to work to the south-west of Ireland where, some 250 miles west of Ushant, a sounding of 2500 fathoms was shown on the chart. Since there were few reliable soundings deeper than about 3000 fathoms anywhere in the ocean, Thomson reasoned that if they could demonstrate the existence of life down to 2500 fathoms '. . . the general question would be virtually solved for all depths of the ocean, and any further investigation of its deeper abysses would be mere matter of curiosity and of detail' (Thomson, 1873, p. 93).

After calling at Queenstown to coal and to pick up Carpenter's son, P. H. Carpenter, the *Porcupine* sailed once more on 19 July and proceeded in a roughly south-westerly direction, dredging at relatively shallow depths as she crossed the Great Sole Bank and the unsuspected very rough topography of the upper parts of King Arthur Canyon to the south of the Goban Spur. Finally, on 22 and 23 July two successful dredge hauls were obtained on the abyssal plain south of the Pendragon Escarpment at 2435 and 2090 fathoms respectively (stations 37 and 38), depths which were not to be exceeded until February 1874 as H.M.S. *Challenger* sailed from the Canaries towards the Antilles.

The *Porcupine* now steamed northwards once more, towards the southwestern tip of Ireland, taking a series of four dredge samples on the Goban spur (Stations 39–42) and three (43–45) on the eastern flank of the Porcupine Seabight. After coaling at Haulbowline on 2 August the vessel reached Belfast on Wednesday 4. On August 7 Thomson summarised the results of the cruise in a letter to A. M. Norman (see Mills, 1980) which was presented at the annual meeting of the British Association in Exeter and published in the Annual Report (Rep. Brit. Ass. 1869 (1870): 115). That Norman should work on the crustaceans collected was already decided, for Thomson ends his letter 'I trust to your contributing the Crustacea, which will be sent to you as soon as possible.'

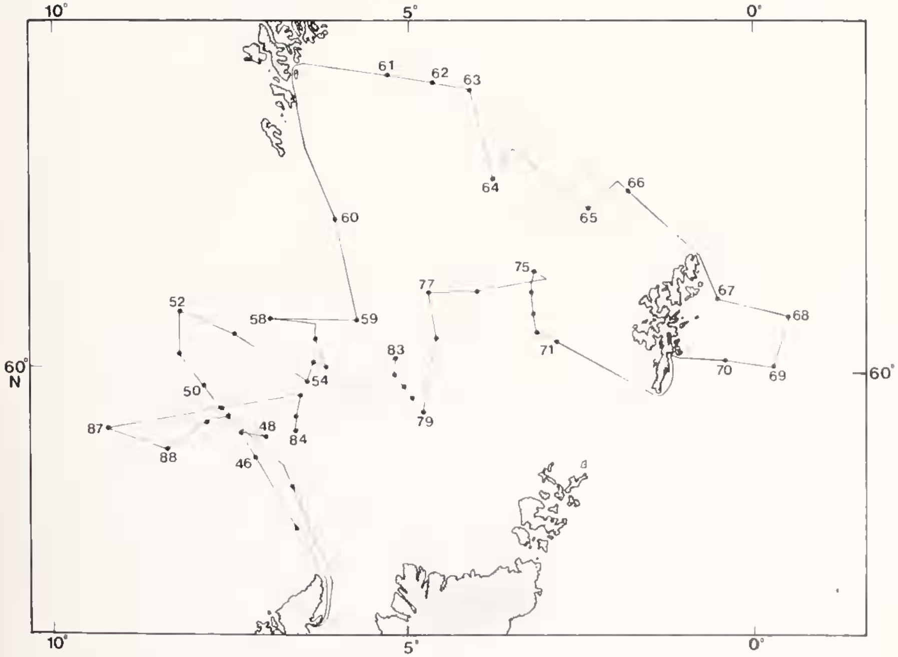

Fig. 4 Track of the third cruise of HMS *Porcupine* in 1869. Redrawn from Thomson, 1873, plate IV.

Having been joined by W. B. Carpenter, and having had her boilers cleaned out, the *Porcupine* sailed from Belfast on August 11, making for Stornoway from where she was to begin the third and final cruise of 1869 to extend the work of the *Lightning* the previous year (Fig. 4). The ship left Stornoway on August 15 and returned three weeks

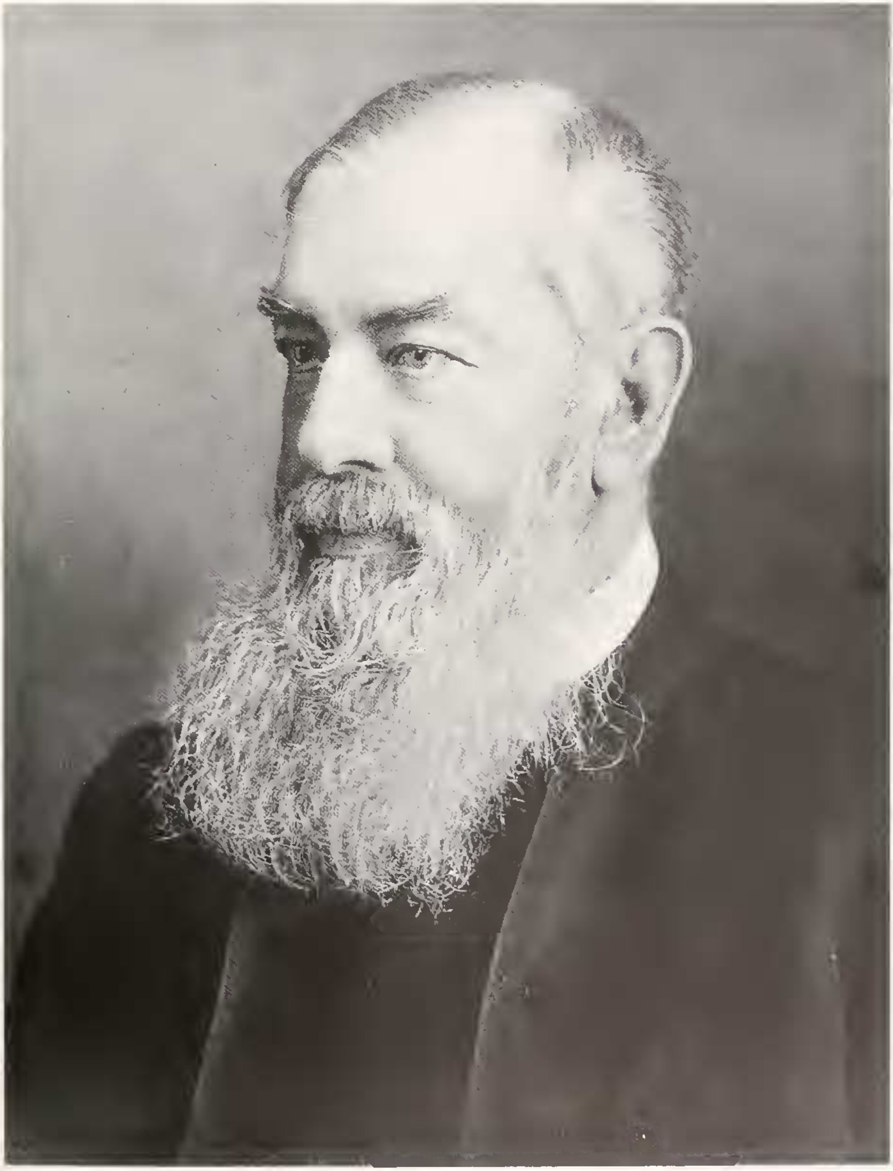

Fig. 5 The Rev. Canon Alfred Merle Norman, 1831–1918. Both from undated portrait photographs: (left) published in *Proceedings of The Royal Society of London* 1919 (Obituary Notices) B 90: xlvi–l (see Stebbing, 1919); (right) from portrait collection of Library Services BM (NH).

later, having called at Thorshaven and Lerwick and having worked 41 dredgingstations between the Faeroes and Shetland and four to the east of Shetland. Finally, on September 15 the *Porcupine* returned to Belfast where the scientists left her.

Following the success of the 1869 cruises the *Porcupine* was made available once more in 1870, this time for work in the Mediterranean. As before, the total time available was to be divided into separate cruises, the first part, from Falmouth to Gibraltar, to be under the scientific direction of Jeffreys, and the Mediterranean cruise to be overseen by Carpenter and Thomson. In the event Thomson was taken ill and did not participate in the 1870 cruises.

The ship left Falmouth on July 4 and, after experiencing fog and contrary winds in the western Channel, eventually reached the continental slope to the south of the Great Sole Bank three days later. Between 7 and 11 July a series of nine dredge hauls were taken in the region between 48°06′ and 48°38′N and 9°11′ and 10°15′W. This region is now known to be highly dissected by canyons where a modern oceanographer would be very reluctant to shoot a dredge or trawl for fear of losing the gear. In the relative ignorance provided by traditional rope soundings the *Porcupine* seamen and scientists cheerfully fished their gear repeatedly in the area at depths ranging between 93 and 717 fathoms (170m and 1312m), apparently retrieving the dredge safely on each occasion and only twice obtaining an unsatisfactory catch!

Jeffreys was now anxious to obtain some dredge hauls in the neighbourhood of the very deep stations sampled the previous year. Unfortunately, however, the ship encountered bad weather and had to make for Vigo, all of the remaining *Porcupine* samples being from off the Iberian Peninsula and within the Mediterranean. Before reaching Gibraltar Jeffreys worked a further 30 'official' dredge stations together with a number in shallow waters which were not given station numbers. At Gibraltar he handed over to Carpenter who took a total of 23 hauls in the western Mediterranean before returning to Cowes on October 8.

THE FATE OF THE DECAPODS

In accordance with the intention expressed in Thomson's letter mentioned above, the vast majority of the *Lightning* and *Porcupine* crustaceans were sent to the Rev. A. M. Norman (Fig. 5), then serving as Rector of the coal-mining parish of Burnmoor in the dioceses of Durham (Stebbing, 1919; Mills, 1980). Most of this material remained in Norman's care for at least 28 years, eventually reaching the British Museum (Natural History) in the 'Norman Collection' between 1898 and 1911.[1]

By the time Thomson was preparing *The Depths of the Sea*, Norman had obviously carried out at least a preliminary examination of most of the decapod material collected and had apparently begun to prepare some descriptive texts which were made available to Thomson. On the basis of the information provided to him, Thomson recorded the discovery of the following three new crab species.[2]

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[1] Perhaps not surprisingly, Norman, and probably the other specialists to whom the samples were sent, did not receive all of the material collected. P. Herbert Carpenter, for instance, presented five *Dorhynchus thomsoni*, four *Munida tenuimana*, and one *Rochinia carpenteri* to the Museum in 1882 (registered under 82.14). These specimens are labelled as collected from the *Porcupine* in the 'North Atlantic, warm area', and must therefore have been taken during the third cruise in 1869 in which Carpenter participated. He presumably took them for his own collection as souvenirs of the cruise and it is very likely that other material similarly found its way into private collections. Some of the material that followed the more official routes similarly failed to find its way into the national collections, the classic example being the molluscs which went to Jeffreys and were ultimately purchased by the Smithsonian Institution along with the rest of Jeffreys' collection (Waren, 1980).

Dorhynchus thomsoni Thomson, 1873

Thomson's treatment of this species consisted of the following short passage (p. 175). 'A pretty little stalk-eyed form *Dorynchus thomsoni*, Norman (Fig. 34), small and delicate, and very distinct from all previously described species of the genus, is very widely distributed. This crab, from its long spiny legs and light body, very often comes up entangled on the part of the rope which had been passing over the ground.'

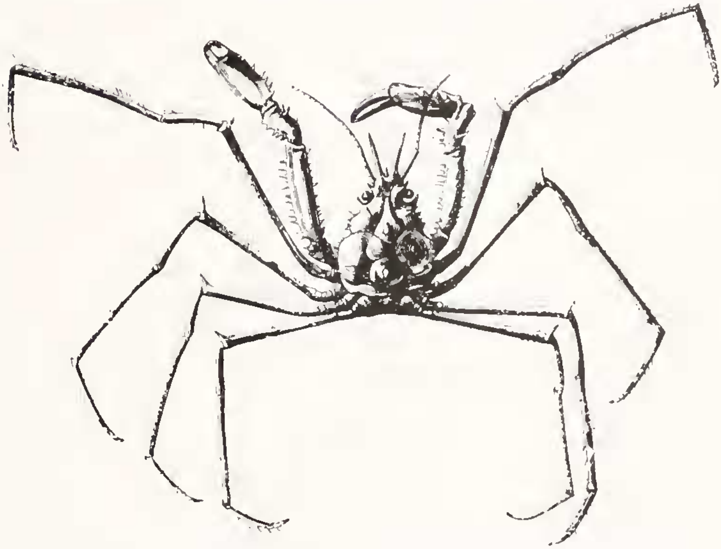

Fig. 6 Thomson's original, and rather poor, illustration of *Dorhynchus thomsoni*. (From *The Depths of the Sea*, fig. 34, p. 174).

This is a rather curious statement since this was the first mention of the genus *Dorynchus* (later corrected to *Dorhynchus* (see Holthuis, 1962), so that there were no 'previously described species of the genus'. This almost certainly indicates that Norman had initially intended to place the new species in an existing genus, probably *Inachus*, but decided to establish the new genus after Thomson had already incorporated the original concept. Alone, the text would certainly not establish the identify of the species beyond doubt, but the illustration (Fig. 6), while not good, is certainly identifiable and can be associated with the specimen (B.M.(N.H.) reg. no. 1907.8.28.5) on which the figure is based. Following Thomson, the authorship of this species was consistently attributed to Norman for almost a century until its correct attribution, to Thomson, was established by Holthuis (1962) and the illustrated specimen was designated as the lectotype in Christiansen (1969). The species is thus one of the few examples of a specific epithet which is legitimately based on the same name as that of its author.

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[2] From the preliminary account of the 1870 *Porcupine* cruise by Carpenter and Jeffreys (1870) it is clear that Norman originally intended to give quite different names to two of these species; *Ethusa granulata* was to have been *E. mirabilis*, while *Amathia Carpenteri* was to have been *A. Jeffreysi*. However, since neither of these original names were accompanied by descriptions they are both *nomina nuda*.

Rochinia carpenteri (Thomson, 1873)

Following on from the *Dorhynchus* passage, Thomson wrote (p. 176) 'Another handsome new species, *Amathia carpenteri*, Norman (Fig. 35), was common in the sandy chalk-mud of the "*Holtenia* ground". The genus had previously been familiar as a Mediterranean form.' As in the case of *Dorhynchus*, this statement would clearly not identify the species but, as before, the illustration (Fig. 7), which in this case is good, is readily identifiable and can again be linked with the specimen on which it was based (B.M.(N.H.) reg. no. 1907.8.28.3). Again as in *D. thomsoni*, the authorship of this species was consistently attributed to Norman until its correct attribution was established by Sivertsen and Holthuis (1956) and the illustrated specimen was selected as the lectotype by Christiansen (1969).

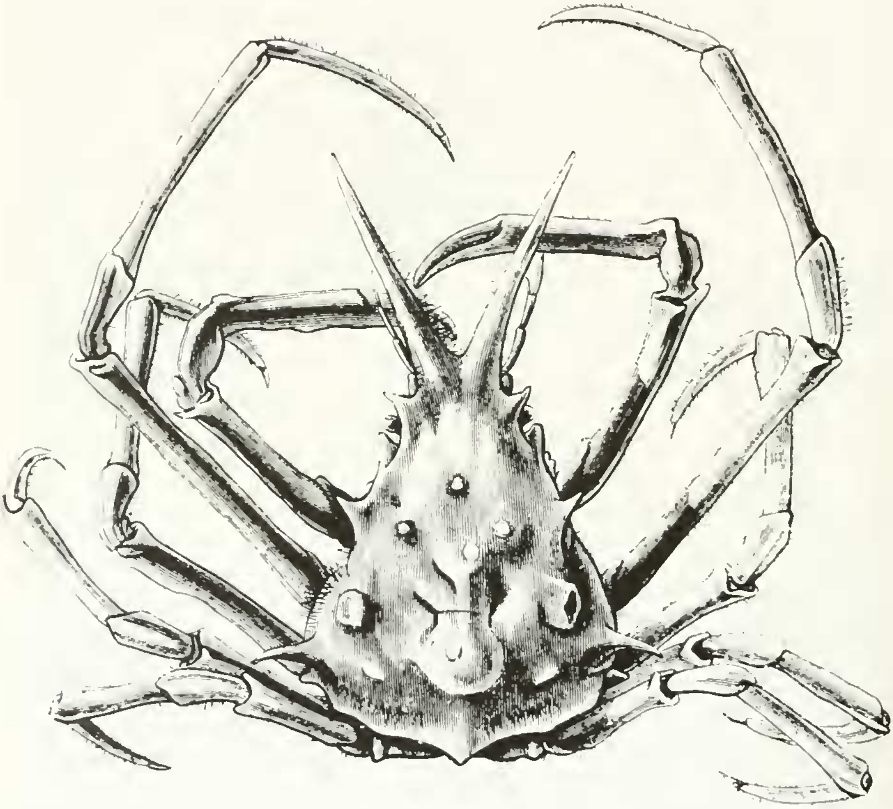

Fig. 7 Thomson's original illustration of *Rochinia carpenteri* (From *The Depths of the Sea*, fig. 35, p. 175).

Cymonomus granulatus (Norman in Thomson, 1873)

The third new crab species is more problematical. Thomson did not illustrate this species and mentions it in the following passage following directly on from the reference to *Rochinia carpenteri*.

> 'I quote from a preliminary notice of the Crustacea by the Rev. A. Merle Norman: "*Ethusa granulata* (sp. n.), the same species as that found off Valentia, but exhibiting

> a most extraordinary modification of structure. The examples taken at 110–370 fathoms in the more southern habitat have the carapace furnished in front with a spinose rostrum of considerable length. The animal is apparently blind, but has two remarkable spiny eye-stalks, with a smooth rounded termination where the eye itself is ordinarily situated. In the specimens however from the north, which live in 542 and 705 fathoms, the eye-stalks are no longer moveable. They have become firmly fixed in their sockets, and their character is quite changed. They are of much larger size, approach nearer to each other at their base, and instead of being rounded at their apices they terminate in a strong rostrate point. No longer used as eyes, they now assume the functions of a rostrum; while the true rostrum so conspiuous in the southern specimens has, marvellous to state, become absorbed. Had there been only a single example of this form procured, we should at once have concluded that we had found a monstrosity, but there is no room for such an hypothesis by which to escape from this most strange instance of modification of structure under altered conditions of life. Three specimens were procured on two different occasions, and they were in all respects similar."'

Thirty years later Lankester (1903) maintained that two distinct species had been confused in this statement. Accordingly, he proposed the retention of Norman's specific name for the apparently shallow-living form, and named the more modified form *normani* in Norman's honour. In the meantime, *E. granulata* had been transferred to the genus *Cymonomus*, established by Alphonse Milne-Edwards (1880) for *C. quadratus*, a species collected from the *Blake* in the West Indies. The transfer was first reported by Milne-Edwards (1881) in a preliminary account of the results of the *Travailleur* expedition of 1881 in which *C. granulatus* was recorded from the Mediterranean, though it was neither described nor illustrated. Norman (1880) had himself already reported the species from the *Travailleur* collections made off the north coast of Spain in 1880, a cruise in which both he and John Gwyn Jeffreys had been invited to participate. At the same time Norman noted that the species had also been taken off Portugal during the 1870 cruise of the *Porcupine*, along with *Dorynchus Thomsoni*, *Amathia Carpenteri* and *Ebalia nux*.

Up to this time no illustration of a *Cymonomus* species had been published, but in 1883 a *Travailleur* specimen of *Cymonomus granulatus* appeared on a plate in Milne-Edwards' privately printed *Recueil de figures des Crustacés nouveaux ou peu connus* (see Fig. 8). Parts of this plate were reproduced or redrawn for Filhol's (1885) semi-popular account of the *Travailleur* and *Talisman* cruises, and later in Milne-Edwards and Bouvier's (1900) detailed account of the decapods collected during these expeditions. At the same time, *C. granulatus* was reported from as far south as 21°53′N, off the coast of north-west Africa.

At this point there had been no suggestion that two species might be involved, but Lankester's interest was aroused by a reference to Norman's account in Lubbock's book *The Beauties of Nature* (1893), in which *Ethusa granulata* is cited as an example of a species with a wide bathymetric range in which there is a progressive modification and reduction in the eyes with increasing depth. Initially, Lankester thought that the species might form the basis of an instructive public exhibit in the British Museum (Natural History) of which he had been director since 1898. But as he investigated this possibility he concluded that two distinct taxa were involved and he also uncovered what he thought were a series of errors which had led to considerable confusion in the interpretation of Norman's original notes.

First, it was clear that Lubbock had wrongly attributed Norman with referring to three forms, including one 'living near the surface' in which well-developed eyes are present; in fact, Norman referred to only two.

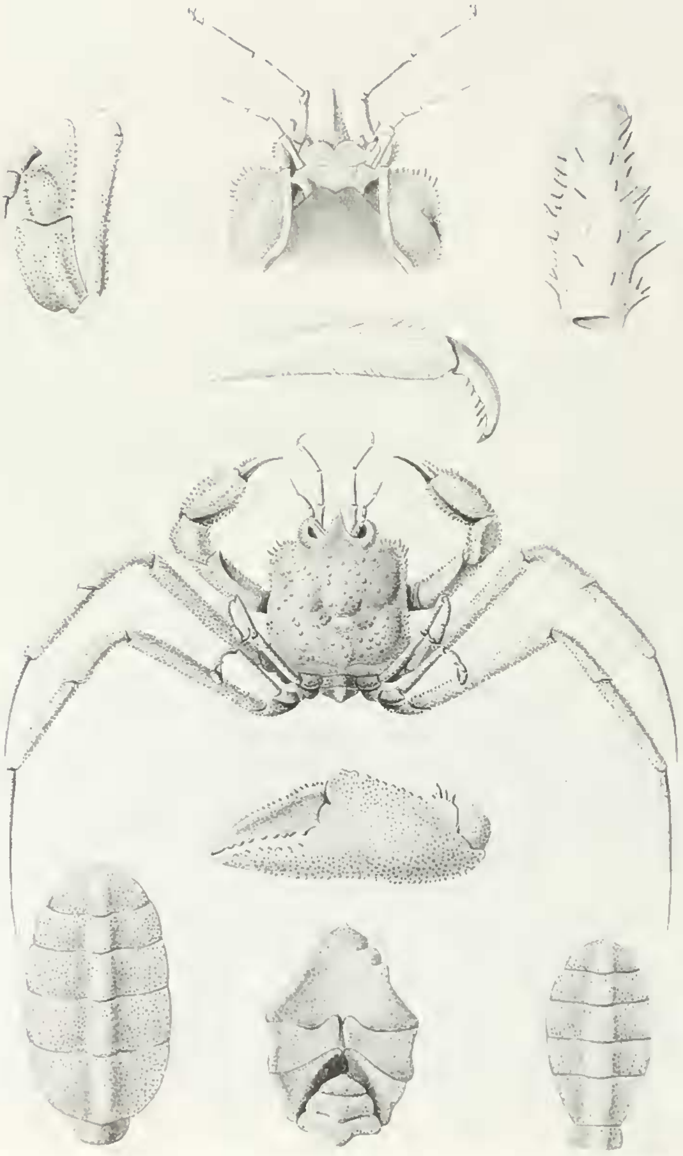

Fig. 8 The plate illustrating *Cymonomus granulatus* in Milne-Edwards (1883), *Recueil de figures des Crustacés nouveaux ou peu connus.*

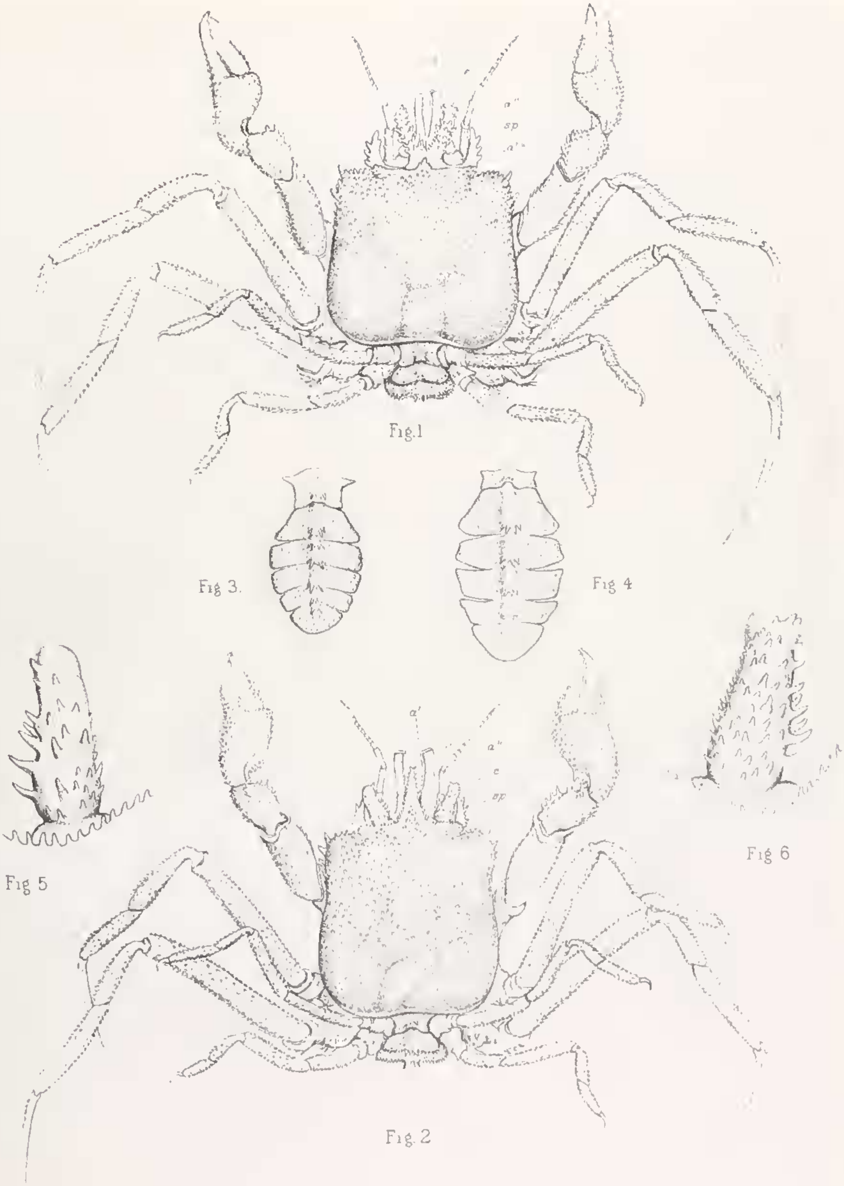

Fig. 9 Illustrations of *Cymonomus normani* (Fig. 1) and *Cymonomus granulatus* (Figs. 2–6) by Albany Hancock which appeared in Lankester (1903).

Second, Lankester pointed out that Norman's quoted passage was somewhat misleading. Norman had intimated that the two forms were bathymetrically separated, the 'modified' form being the deeper-living. But Lankester demonstrated that the specimens which Norman had available to him from the *Porcupine* cruises of 1869 came from overlapping depth ranges, the normal form having been taken at stations in depths ranging from 106 to 808 fathoms (193–1471m), while the three specimens of the modified form were from 542 and 705 fathoms (986–1283m). Instead, Lankester thought that the two forms were geographically separated. All of the known examples of the 'modified' form at the time of Lankester's study were from northern localities, the three specimens collected from the *Porcupine* being from the '*Holtenia* ground' at about 59°30'N, while a single specimen had been taken by the *Ingolf* south west of Iceland at a depth of 486 fathoms (885m) and was dealt with later in Hansen (1908). The 'normal' form, on the other hand, had been encountered only at much more southerly localities, from south-west of Ireland to off north-west Africa and the Mediterranean. Furthermore, Norman's quoted text had included the statement that the eyes in the modified form 'terminate in a strong rostrate point. No longer used as eyes, they now assume the functions of a rostrum.' This, wrote Lankester, had naturally led to the assumption that 'their terminations become combined into a strong pointed beak'.

Third, Lankester claimed that the specimen illustrated in Milne-Edwards' '*Recueil . . .*', and later in the *Travailleur* and *Talisman* report, had had the eyes removed before being given to the artist. While these illustrations are not very clear, and are certainly very inferior to the excellent ones by Hancock reproduced in Lankester's paper (Fig. 9), I believe that Lankester was mistaken and that the eyes are included. In any case, this point is relatively unimportant to the general problem of the nomenclature and authorship of the two *Cymonomus* species since Milne-Edwards' illustrations clearly show the normal form with a well-developed rostrum.[3].

Having thus carefully examined the published data and the available material, Lankester provided an excellent comparison of the species concerned, including *C. quadratus*, clearly describing his new species *C. normani*. This description was based on the three *Porcupine* specimens taken at stations 47 and 88 though Lankester did not designate a holotype.

However, Lankester introduced an element of confusion himself, for in two places (pp. 444 and 455) he refers to a description of *granulatus* supposedly published by Norman in the Annual Report of the British Association for 1873. Even if such a paper had been published it would have been pre-dated by *The Depths of the Sea* which was published earlier the same year. In fact, however, the paper does not appear to have been published, even by title only as was not unusual at that time. The quotation from Thomson's book, reproduced above, must therefore be considered the first published description associated with the name *Ethusa granulata*. This passage clearly associates Norman's name with the form taken off Valentia, with a well-developed rostrum and well-separated eyes with smooth corneal regions. Since this unequivocally identifies the species concerned, and is equally unequivocally in the words of Norman rather than Thomson (see Article 50, p. 91 in the *International Code of Zoological Nomenclature*, Third Edition, 1985) its correct attribution should be *Cymonomus granulatus* (Norman in Thomson, 1873).

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[3] Similarly irrelevant, though nevertheless remarkable, was the erroneous depiction of chelate fourth and fifth pereiopods, pointed out by Lankester, in the first published illustration of *Cymonomus quadratus* which appeared in Milne-Edwards and Bouvier (1902).

Ebalia nux Milne-Edwards, 1883

This fourth crab species in the Porcupine collection which Norman recognised as previously undescribed was not mentioned in *The Depths of the Sea*. The first published indication that the species had been taken from the *Porcupine* was in Norman's (1880) *Travailleur* report where 'Ebalia nux, Norman' was mentioned in a list but was not accompanied by a description. The species similarly appeared as a *nomen nudum* in Milne-Edwards (1881) and in Marion (1883). In 1883 a *Travailleur* specimen was illustrated in Milne-Edwards' '*Recueil* ...' and was labelled *Ebalia nux* (Norm.) (Fig. 10).

The first written description was provided by Pocock (1889) in an account of the crustaceans collected off the coast of Ireland in the *Flying Fox* (= ?*Flying Falcon*, see Rice, 1986) in July 1889. Pocock had joined the staff of the British Museum (Natural History) in 1885 and had succeeded E. J. Miers in charge of the Crustacea Section, being himself succeeded by W. T. Calman in 1903. During his period at the Museum, Pocock worked mainly on the arachnids and myriapods, writing very few papers on the crustaceans. He was therefore not part of the rather close-knit marine biological establishment of the time, nor of the international carcinological community, whereas Norman was a central figure in both groups. This almost certainly contributed to the acrimonious series of published exchanges between the two men which followed the publication of the *Flying Fox* report.

In dealing with *Ebalia nux*, Pocock was unaware of any previous descriptions but had before him material of the species collected from the *Porcupine* in the Mediterranean in 1870 and already deposited at the B.M.(N.H.) by Norman. He accordingly referred to the species as '*Ebalia nux*, Norman, MS', described it and designated as types 'an adult male and female specimen belonging to the series dredged in the Mediterranean.'

Only a week or two after the *Flying Fox* cruise, the hydrographic survey vessel HMS *Research*, with G. C. Bourne aboard, had obtained a series of trawl samples in the same general area. When Bourne (1890) reported the results of this cruise he enlisted Norman's assistance and quoted some of the notes provided. These included a list of *Porcupine* and *Travailleur* localities at which *E. nux* had been obtained and the remarks that 'Mr. Pocock seems to have been unaware that *Ebalia nux* had been admirably figured by Prof. A. Milne Edwards', and that Profs A. Milne Edwards and Marion courteously recognised my MS. name *Ebalia nux*, but if that is rejected it will stand as *Ebalia nux*, A. Milne Edwards' and not, by implication, *Ebalia nux* Pocock.

Pocock (1890a) saw this as a charge of 'lack of courtesy for not giving what he [Norman] considers due acnowledgement to the name he applied to the above Crustacean' (somewhat provocatively referred to in the title of Pocock's note as '*Ebalia nux*, Milne-Edwards.') He went on to claim that in an effort to locate the original description of *Ebalia nux* he had written to Norman but received no reply, thus turning the charge of discourtesy back onto Norman, but carefully avoiding saying so.

Norman's (1890) response was swift and severe. After reproducing both Pocock's original reference to *E. nux* and his own notes quoted by Bourne, he suggests that Pocock had over-reacted to the latter due to his own guilty conscience. He goes on to admonish him as 'an Assistant at the British Museum, who has a magnificent library at his elbow', for failing to refer to Milne-Edwards' (1883) illustration of the species in the '*Recueil* ...' 'If he did not consult that work [wrote Norman], he ought to have done so. If he did consult it ... he had no excuse for writing '*Ebalia nux*, n. sp.' instead of either '*Ebalia nux*, Norman, MS., or '*Ebalia nux*, A. Milne-Edwards.'' Now Norman takes exception to Pocock's designation as the type material specimens collected from the *Porcupine* which had been sent to the Museum when E. J. Miers had been writing up the *Challenger* brachyurans. 'Whether this was a courteous act [wrote Norman] let others judge'. Finally, Norman deals with the problem of Pocock's letter rather lamely,

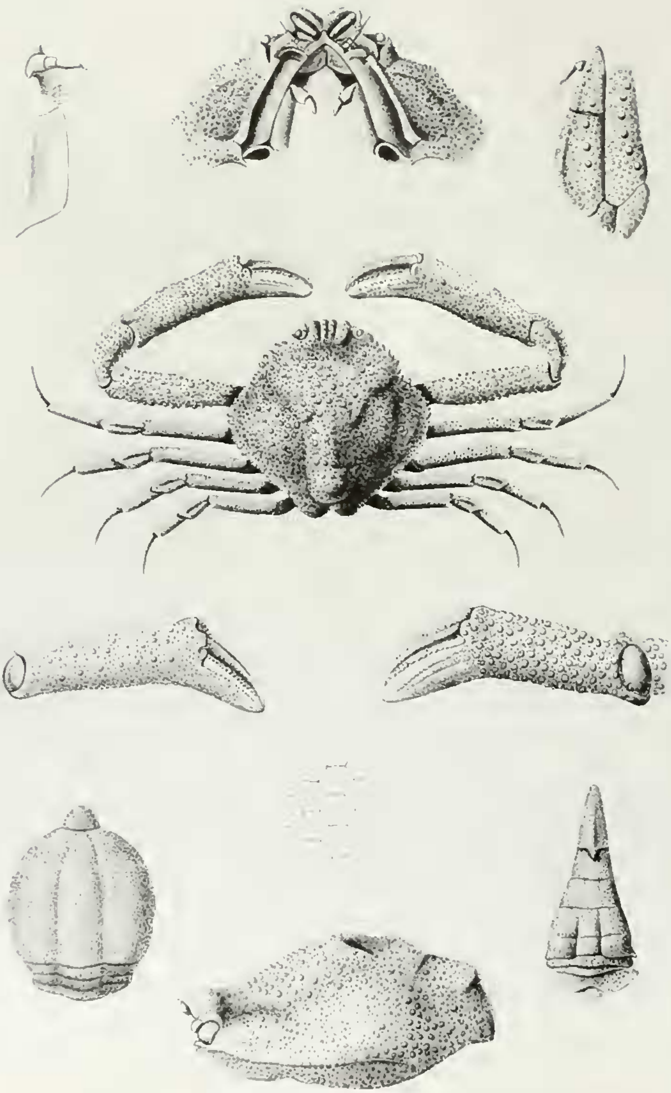

Fig. 10 The plate illustrating *Ebalia nux* in Milne-Edwards (1883), *Recueil de figures des Crustacés nouveaux ou peu connus.*

claiming that if he did not reply to it this was not through lack of courtesy but simply because he was too busy with his professional duties as a cleric.

In reply, Pocock (1890*b*) rejected the suggestion that he had a guilty conscience since, he wrote, he had had no idea that Norman would take exception to his treatment of the species. Far from a discourtesy, he felt that his designation of Norman's specimens as types of the species was 'both expedient and just.' Finally, he dealt with his own failure to refer to Milne-Edwards' illustration of *E. nux* in the '*Recueil* . . .' (1883), pointing out that despite Norman's reference to the Museum's 'magnificent library' neither it nor the libraries of the Royal, Linnean or Zoological Societies contained a copy of this work. Furthermore he quoted a letter from Milne-Edwards stating that only 50 copies of the '*Recueil* . . .' had been produced, that most of these had been sent to naturalists then working in carcinology (not including Pocock, of course), that only a few copies had been offered for sale and that the work had consequently become almost unobtainable.[4] Under the circumstances, suggested Pocock, he could hardly be blamed for not having referred to it.

As far as I am aware, this was the end of the published exchanges, for in the next volume of the *Annals and Magazine* both protagonists published on other topics. Norman continued to be attributed consistently with the authorship of *E. nux* for a further 86 years (see Turkay, 1976), though as early as 1918 Pesta had suggested that it should really go to Milne-Edwards. Whether or not this is so depends upon whether Milne-Edwards (1883) counts as a true publication, for if it does not, Pocock is the author and the types are the *Porcupine* specimens which he designated. However, although Milne-Edwards' action in producing the '*Recueil* . . .' would be deplored today, the fifty copies produced were 'obtainable, when first issued, free of charge or by purchase', therefore fulfilling the criteria for publication in Article 8(a)(2) of the *International Code of Zoological Nomenclature*. Moreover, Dr. L. B. Holthuis pointed out to me that the 'Recueil' has already been recognised nomenclaturally since at least two names published in it (*Pantomus* and *P. parvulus*) have been placed on the *Official List*. Consequently, the correct attribution of the species is *Ebalia nux* A. Milne-Edwards, 1883, and the type must be a specimen from the *Travailleur* material in Paris, preferably that on which Milne-Edwards' illustration was based.

THE 'NORMAN COLLECTION' AND ITS ACQUISITION BY THE BRITISH MUSEUM (NATURAL HISTORY)

As a young Curator of Crustacea Malacostraca at the British Museum (Natural History) in the mid 1960s, I was aware of the 'Norman Collection' as one of the larger 'named' collections within my care. The specimens were distributed through the sectional collection, but the most tangible evidence of its original unity was, and is, a single large ledger in which some 50,000 specimens were registered under the general accession number 1911:11:8. A much smaller number of specimens identified as having been purchased from Norman appear in the general register at various times between 1898 and 1911, and a few even before this period. The official *History of the Collections* up to 1900 (British Museum (Natural History) 1906) contains a reference to the purchase of the Norman Collection in 1898 and this is repeated in Stearn's (1981) excellent general account of the history of the Natural History Museum. Otherwise, the acquisition of the collection does not seem to have been documented and the following notes are an attempt to rectify this.[5]

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[4] A note to this effect, apparently in Pocock's handwriting and with a reference to Milne-Edwards' letter, is attached to the British Museum (Natural History) copy of the '*Recueil* . . .' which was obtained subsequently.

Alfred Merle Norman was born at Exeter in 1831 and was educated at Winchester and Christ Church, Oxford, where he obtained a B.A. in 1852 and was ordained in 1856. As a cleric he worked almost entirely in the Durham diocese, being Curate at Houghton-le-Spring from 1864 to 1866 and Rector of the coal-mining parish of Burnmoor from 1866 to 1895. He had been appointed Hon. Canon of Durham in 1885 and returned to Houghton in 1895 as Rector and Rural Dean. He retired on medical grounds in 1898, moving to Berkhamstead where he lived until his death in 1918.

Norman had already shown an interest in natural history during his school days and published an account of the molluscs of Oxfordshire in 1851 while he was still an undergraduate. The two years before his ordination were spent on the Isle of Cumbrae and here he began his lifelong interest in marine biology.

During the 1860s he was active in the British Association Dredging Committees, publishing many of the results of dredging in northern waters and dealing with a wide range of taxonomic groups. In the final Shetland dredging report published in 1868, for instance, Norman dealt with the Crustacea, Tunicata, Polyzoa, Echinodermata, Actinozoa, Hydrozoa and Porifera.

In 1882 he completed Bowerbank's unfinished Ray Society volume on the sponges, based partly on his own collection, and in 1890 he published a 'Revision of the British Mollusca', having been at one time the President of the British Conchological Society.

Norman's main interest, however, was in the crustaceans and he published numerous papers on a wide range of crustacean groups, including an account of *The Crustacea of Devon and Cornwall* published in collaboration with Thomas Scott in 1906.

Norman was a central figure in British marine science from the 1860s to the end of his life. He also had strong contacts with foreign specialists, particularly in France, being invited to participate with John Gwyn Jeffreys in the cruise of the *Travailleur* in 1880.

In common with many of his contemporaries, Norman amassed a biological collection both from his personal collecting excursions and by purchase and exchange. To encourage and solicit exchanges he published catalogues of his collection, including two lists of his crustacean holdings. The first of these, which appeared in 1886, listed 1362 species, while the second, published in 1905, listed 2808 species. He was thus clearly still actively adding to his collection well into his 70s, despite having arranged to sell it to the Natural History Museum, and part of it having been already received by the Museum and paid for!

Norman offered his collection to the British Museum (Natural History) in a letter to the Director Sir William Flower, dated 2 February 1898, explaining that he was due to retire in April and would be moving to Berkhamstead. Asked for an indication of the extent of the collection on March 1 Norman sent a manuscript list and a copy of his printed catalogue. After some deliberation Flower offered Norman a total of £2,000 for the collection but explained that such a sum could not be found out of the funds available for purchase in a single year. Instead, he suggested that both the transfer of the collection to the Museum, and the payment, should be spread over a number of years, the first payment of £500 being paid on receipt of the first part of the collection.

On 31 March 1898 Norman wrote his acceptance of the general offer. But he pointed out that the first instalment would be worth much more than £500 and suggested that a guarantee should be drawn up to protect both parties, arranging for a second £500 to be paid 5 years later, if Norman was still alive, and the balance to be paid on his death.

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[5] In this section the details of Norman's career are taken from his obituaries by Stebbing (1919*a* and *b*), and from the excellent account of Norman's life and work by Mills (1980). The references to the acquisition of the Norman Collection by the Natural History Museum are from the Director's letter files and the official minutes of the Trustees meetings in the Museum archives. I am grateful to the Museum authorities for permission to consult and quote from these documentary sources.

Flower was not keen on such an arrangement and pointed out that, having paid for the first part of the collection, the Museum had no guarantee that the remainder of the material would remain in its current state and not deteriorate for various reasons.

On April 16 Norman replied somewhat defensively. He admitted that his catalogues may not be absolutely correct since some of the listed material might already have become dried up or lost. However, such possible losses would be more than compensated for by the fact that he intended to continue amassing material as long as he was able. Moreover, he wrote, the collection already contained items not in the catalogues – including 'Molluscs dredged by the French expedition in the 'Talisman' purchased [for £14] from the Marquis de Folin.'

Two days later he wrote to Flower yet again, still concerned that he should have some guarantee that the Trustees of the Museum would not renege on the agreement. In Flower's reply, dated 21 April, the Director still resisted having a formal guarantee, saying that he was sure that Norman 'will find the Trustees as safe as the Bank of England, even when not prompted by me'. This was somewhat prophetic, for Flower's Directorship was to last only a further four months. He was already 66 years old and his by no means robust constitution had suffered a collapse the previous October. He resigned his post in August 1898, to be succeeded by E. Ray Lankester, and died the following July. The arrangement of the purchae of the Norman collection was therefore among his final official acts, the results being presented at two of the last few monthly Trustees meetings that he attended.

At the first of these, on 23 April 1898, Flower simply reported that Norman had offered his collection of more than 10,000 species of mainly marine invertebrates for a total of £2000, to be paid for in instalments as they were delivered to the Museum. This was approved by the Trustees and Norman's letter to Flower accepting the arrangement was written the same day. At the next meeting, on 25 June 1898, Flower was able to report the receipt of the first instalment of the collection, including some terrestrial and freshwater molluscs, totalling some 26,191 specimens. The Trustees approved the payment of the first £500.

The receipt of the second instalment was reported to the Trustees by Lankester on 24 March 1900. This instalment 'included the remainder of Dr. Norman's collection of British Echinodermata, 3000 species of Entomostraca, 49 species of Mediterranean Copepods, 925 microscopic preparations of Entomostraca, a large series of Polychaeta, and collections of Tunicata, Mollusca, Crustacea, Cirripedia, Anthozoa etc.' The Trustees approved the payment of a second £500.

No further Norman material came to the Museum during Lankester's turbulent Directorship and, as noted above, the publication of the second edition of the 'Museum Normanianum' in 1906 suggests that Norman was actively increasing his collection at this time. However, In January 1910, Sydney Harmer, the Keeper of Zoology, was able to report to Lankester's successor, Lazarus Fletcher, the receipt of the third instalment of the Norman collection, consisting of 'about 3,290 specimens of sponges (including 195 types and 185 co-types), and of a number of specimens of Hydrozoa, Anthozoa, Crustacea, etc.'

At the Trustees meeting of 22 October 1910 approval was given for the payment of £200 for this third instalment, the Trustees presumably being made aware that the outstanding instalment was much larger.

This fourth and final instalment was received in November 1911 and included the 50,000 crustaceans mentioned above. A payment of £500 was authorized immediately and the payment of the final £300, being the balance of the originally agreed £2000, was approved in June 1912, presumably after the extent and state of the fourth instalment had been ascertained.

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APPENDIX. AUTHORSHIP ATTRIBUTION OF THE SPECIES

The following restricted synonomies of the four crab species dealt with gives an indication of the range of authorship attribution in the literature.

Doryhnchus thomsoni
Dorynchus thomsoni, Norman (Thomson, 1873)
Lispognathus thomsoni, Norman (Milne-Edwards, 1881).
Lispognathus thompsoni, (A. M. Edw.) (Anon, 1884)
Lispognathus Thomsoni (A. M.-Edw.) (Filhol, 1885)
Lispognathus Thomsoni, A. M. Edw. (Perrier, 1886)
Dorynchus Thomsoni, Norman (Perrier, 1886)
Lispognathus Thomsoni (Pocock, 1889)
Lispognathus thomsoni, Norman (Bourne, 1890)
Lispognathus thomsoni, Norman (Milne-Edwards and Bouvier, 1900)
Lispognathus Thomsoni Norm. (Hansen, 1908)
Lispognathus Thomsoni, Norman (Bouvier, 1922)
Archaeopsis thomsoni (Norman) (Rathbun, 1925)
Dorhynchus Thomsoni Norman (Bouvier, 1940)
Archaeopsis thomsoni (Norman) (Barnard, 1950)
Dorhynchus thomsoni Thomson (Holthuis, 1962)
Dorhynchus thomsoni Thomson (Zariquiey, 1968)
Dorhynchus thomsoni Thomson (Christiansen, 1969)
Dorynchus thomsoni Thomson (Ingle, 1980)
Dorhynchus thomsoni Thomson (Manning and Holthuis, 1981)
Archaeopsis thomsoni (Thomson) (Griffin and Tranter, 1986)

Rochinia carpenteri
Amathia carpenteri, Norman (Thomson, 1873)
Scyramathia carpenteri Norman (Milne-Edwards, 1880*a*)
Scyramathia Carpenteri (A. M.-Edw.) (Filhol, 1885)
Scyramathia Carpenteri, Norman (Perrier, 1886)
Anamathia Carpenteri (Pocock, 1889)
Anamathia Carpenteri, Norman (Bourne, 1890)
Scyramathia Carpenteri, Norman (Milne-Edwards and Bouvier, 1900)
Scyramathia Carpenteri (Norman) (Doflein, 1904)
Scyramathia carpenteri Norman (Rathbun, 1925)
Rochinia Carpenteri Norman (Bouvier, 1940)
Rochinia carpenteri (Norman) (Monod, 1956)

Rochinia carpenteri (Thomson) (Sivertsen and Holthuis, 1956)
Rochinia carpenteri (Thomson) (Zariquiey, 1968)
Rochinia carpenteri (Thomson) (Ingle, 1980)

Cymonomus granulatus
Ethusa granulata n.s. (Thomson, 1873)
Ethus granulata, Norman (Norman, 1880)
Cymonomus granulatus (Norm.) (Milne-Edwards, 1883)
Cymonomus granulatus (A. M.-Edw.) (Filhol, 1885)
Cymonomus granulatus, Norman (Perrier, 186)
Cymonomus granulatus, Norman (Milne-Edwards and Bouvier, 1900)
Cymonomus granulatus (Norman) (Doflein, 1904)
Cymonomus granulatus (Norman (Ihle, 1916)
Cymonomus granulatus Norman (Bouvier, 1940)
Cymonomus granulatus (Norman ex Thomson) (Monod, 1956)
Cymonomus granulatus (Thomson) (Zariquiey, 1968)
Cymonomus granulatus (Thomson) (Türkay, 1976)
Cymonomus granulatus (Thomson) (Ingle, 1980)
Cymonomus granulatus (Thomson) (Manning and Holthuis, 1981)

Ebalia nux
Ebalia nux, Norman (Norman, 1880)
Ebalia nux (Norm.) (Milne-Edwards, 1883)
Ebalia nux, Norman, MS (Pocock, 1889)
Ebalia nux, Norman (Bourne, 1890)
Ebalia nux, Norman (Milne-Edwards and Bouvier, 1900)
Ebalia nux Norman (Pesta, 1918)
Ebalia nux Milne-Edwards, 1881 (in note in Pesta, 1918)
Ebalia nux, Norman (A. Milne-Edwards, 1881) (Bouvier, 1922)
Ebalia nux Norman (Nobre, 1931)
Ebalia nux Norman (mss) (Bouvier, 1940)
Ebalia nux Norman ex Milne-Edwards, (Monod, 1956)
Ebalia nux Norman en Milne-Edwards, 1883 (Zariquiey, 1968)
Ebalia nux Norman 1883 (Türkay, 176)
Ebalia nux A Milne-Edwards (Ingle, 1980)

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